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THE NOVEMBER MEETING OF THE MISSOURI SECTION.

The fourth regular meeting of the Missouri Section was held at the Kansas City Junior College, Kansas City, Missouri, on November 13. The single session was held in the morning, the chairman being Professor W. A. LUBY.

The attendance was twenty-four, including the following ten members of the Association:

A. C. Andrews, Minnie W. Caldwell, A. Davis, B. F. Finkel, R. R. Fleet, E. R. Hedrick, W. A. Luby, P. R. Rider, P. Robertson, Eula A. Weeks.

Professor E. R. Hedrick, chairman of the committee appointed¹ by the Missouri Section of the Association to consider the report of the National Committee, presented to the Section the report of the National Committee concerning the junior high schools. The opinions of the committee were, in general, favorable to the recommendations made by the National Committee but a considerable number of detailed remarks and suggestions were made which will be transmitted to the National Committee for their consideration. The only one of these which is far-reaching enough to deserve mention here is the recommendation to the National Committee that the work in demonstrative geometry ought not to be included in the junior high school. The committee was entirely in favor of leading up to demonstrative geometry but felt the work in the junior high schools should stop short of actual demonstrative work.

Mr. Davis stated to the meeting the objects of the National Council of Teachers of Mathematics organized at Cleveland, Ohio, February 24, 1920. The Section voted to become an institutional member of the Council.

The following new officers were elected: Chairman, Professor LOUIS INGOLD; Vice-chairman, Professor R. R. FLEET.

In accordance with previous arrangements the next regular meeting of the Section will be held at the University of Missouri, November 25-26, 1921, in connection with the meeting of the southwestern section of the American Mathematical Society.

The following four papers were read:

- (1) "The relation of caustics to certain envelopes" by Professor O. DUNKEL;
- (2) "A so-called Russian multiplication method" by Professor P. R. RIDER;
- (3) "Sun-spot data and the methods of analysis applied" by Dr. D. ALTER, associate professor of astronomy, University of Kansas (invited);
- (4) "The work of the National Committee on Mathematical Requirements" by Dr. EULA A. WEEKS.

¹ The other members of the committee are: Professor W. H. Zeigel, Professor R. R. Fleet, Miss Zoe Ferguson, Mr. Alfred Davis, Mr. Percival Robertson.

In the absence of the author, the paper by Professor Dunkel was read by title only. Abstracts of the papers follow below, the numbers corresponding to the numbers in the list of titles:

(1) The object of this paper was to show how certain problems concerning the envelopes of circles may be easily solved without the calculus, and the relation of such envelopes to caustics. By aid of the caustic other facts may be obtained without the calculus such as the radius of curvature and an expression for the length of arc of the envelope.

(2) This paper gave an explanation of a curious multiplication method reputed to be used by Russian peasants. [Cf. this MONTHLY, 1918, 139.]

(3) Sun-spot data are typical of a great mass of physical data, of which intensities are observed and plotted as ordinates against the time. The same methods of analysis apply to all. The mathematical theory of these methods is very simple.

This paper reviewed the work of Schwabe, Wolf and Wolfer, Newcomb, Shuster, Larmor and Yamaga, Lockyer, Clough, Dagobert and Turner very briefly. The main part was devoted to an exposition of the methods of Shuster and Turner.

The conclusion of the paper made reference to a new method of attack developed by the author in connection with a closely related problem.

(4) This report by a member of the National Committee summarized the work that has been done by the committee and outlined its plans for the future.

PAUL R. RIDER, *Secretary-Treasurer.*

ON THE CONSTRUCTION AND MODELLING OF ALGEBRAIC SURFACES.

By ARNOLD EMCH, University of Illinois.

1. Introduction. In a paper on a simple method of curve tracing, which appeared in this MONTHLY (1917, 168-172), I have shown how the method of generating curves by projective pencils could be utilized very effectively in many cases of graphic representation in which the customary method of plotting by computation from the equation is unpracticable, or, to say the least, very tedious.

It is obvious to anyone who is thoroughly familiar with all phases of curve tracing that, whenever practicable, the projective, or more generally the geometrographic method, which is either purely constructive, or makes use of a minimum of arithmetical work, is preferable to the method of plotting from the equation. Moreover the graphic method reveals at least something of the curve as a geometric organism, while the plot of the equation merely shows the form of the curve without any inner geometric content.

The graphic method should, of course, not reject taking into account those geometric properties which are more readily and rigorously revealed by an analytical discussion of the equation.